

What is claimed is:

1. A method for adjusting an electron-beam of an electron-beam proximity exposure apparatus comprising the steps of:

5 forming the electron-beam, by passing it through an aperture which has a predetermined length part, into a measurement beam which has a cross section having a measurement part thereof corresponding to the predetermined length part of the aperture;

10 memorizing calibrating information, which includes beam state information and a measured length, wherein the beam state information indicates a state of the electron-beam, and the measured length is the length of the measurement part of the cross section of the measurement beam measured at a predetermined distance from the aperture under the state indicated the beam state information, and the measured length is memorized in relation to the state of the electron-beam indicated the beam state information;

15 20 measuring the length of the measurement part of the cross section of the measurement beam at a predetermined distance from the aperture; and

25 calibrating the state of the electron-beam of the electron-beam proximity exposure apparatus on the basis of the length measured in the measuring step in accordance with the calibrating information.

30 35 2. A method according to claim 1, wherein said state of the electron-beam is the state of a degree of the parallelism of the electron-beam, and said calibrating the state of the electron-beam is calibrating the state of a degree of the parallelism of the electron beam.

3. A method according to claim 1, wherein said state of the electron-beam is a degree of the astigmatism of the electron-beam, and said calibrating the state of the electron-beam is calibrating the state of a degree of the astigmatism of the electron beam.

4. A method for adjusting an electron-beam of the electron-beam proximity exposure apparatus comprising the steps of:

5 forming the electron-beam, by passing it through a aperture which has a predetermined length part, into a measurement beam which has a cross section having a measurement part thereof corresponding to the predetermined length part of the aperture;

10 measuring the length of the measurement part of the cross section of the measurement beam in two different directions at a predetermined distance from the aperture;

15 comparing the measured lengths related to two orthogonal directions; and

20 correcting a degree of the astigmatism of the electron-beam on the basis of the result of the comparison.

5. A device for adjusting an electron-beam of the electron-beam proximity exposure apparatus comprising:

20 an aperture which has a predetermined length part to form the electron-beam passing therethrough into a measurement beam which has a cross section having a measurement part thereof corresponding to the predetermined length part of the aperture;

25 a length measuring portion which measures the length of the measurement part of the cross section of the measurement beam at a predetermined distance from the aperture under a certain state of the electron-beam;

30 a memory unit which memorizes calibrating information including beam status information and a measured length, wherein the beam state information indicates a state of the electron-beam, and the measured length is the length of the measurement part of the cross section of the measurement beam measured at a predetermined distance from the aperture under the state indicated the beam status information, and the measured length is memorized in relation to the state of the

electron-beam indicated the beam status information; and
5 a calibrating portion which calibrates the state of the electron-beam of the electron-beam proximity exposure apparatus on the basis of a length measured by the length measuring portion in accordance with the calibrating information.

6. A device according to claim 5, wherein said state of the electron-beam is the state of a degree of the parallelism of the electron-beam, and said
10 calibrating portion calibrates the state of a degree of the parallelism of the electron beam.

7. A device according to claim 5, wherein said state of the electron-beam is a degree of the astigmatism of the electron-beam, and said calibrating portion
15 calibrates the state of a degree of the astigmatism of the electron beam.

8. A device for adjusting an electron-beam of the electron-beam proximity exposure apparatus comprising:

20 a aperture which has a predetermined length part to form the electron-beam passing there through into a measurement beam which has a cross section having a measurement part thereof corresponding to the predetermined length part of the aperture;

25 a length measuring portion which measures the length of the measurement part of the cross section of the measurement beam in two different directions at a predetermined distance from the aperture;

30 a comparing portion which compares the measured lengths related to two orthogonal directions; and

a correcting portion which corrects a degree of the astigmatism of the electron-beam on the basis of the result of the comparison.

9. A device according to any one of claims 5 to 8,
35 wherein said length measuring portion comprises a fluorescence plane and an image sensor for sensing the image of the cross section of the measurement beam

generated on the fluorescence plane, wherein the fluorescence plane is disposed at a predetermined distance from the aperture.

10. A device according to claim 9, wherein the 5 image sensor comprises a CCD photo acceptance unit.

11. A device according to any one of claims 5 to 8, wherein said length measuring portion comprises a Faraday cup with a knife-edge for detecting electrons in the measurement beam, a moving portion moving the Faraday cup 10 with a knife-edge in a plane perpendicular to a beam axis of the electron-beam, and a profile generator which generates an electron-beam intensity profile at the measurement part of the cross section of the measurement beam on the basis of the output signal of the Faraday cup 15 with a knife-edge, wherein the Faraday cup with a knife-edge is disposed at a predetermined distance from the aperture.